Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	**)**	
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	)	
Amendment of Part 15	**)**	**ET Docket No. 04-37**
Title 47 C.F.R. , New	**)**	
Requirements and Measurement	**)**	**NPRM 04-29**
For Access Broadband Over	**)**	
Power Line Systems	**)**	

Submitted Via the ECFS

COMMENTS ON NOTICE OF PROPOSED RULE MAKING
By Kermit A. Carlson

Introduction

1. I would like to commend the Commission for it's initiative to facilitate a regulative climate that will allow all citizens reliable access to internet digital services. It is unfortunate that many people in this country are not connected to the vast resources available via the internet. The Bush Administration has labeled this the "Digital Divide". I agree that this gap, this disparity of broadband access, must be closed. The method I used to file this comment (ECFS) bears witness to the promise that the internet holds.

2. The proposed changes in Rule Making, addressed by this Comment, mentions but one possible method to close this Divide. Unfortunately, this particular solution, Access Broadband Over Power Line Systems, brings forth with its implementation the

potential of very serious and detrimental interference to present licensed users of the Electromagnetic Spectrum. This potential interference has the distinct possibility of limiting or altogether eliminating access by licensed users to their allotted spectrum.

3. As a matter of introduction I hold a Bachelor's Degree in Mathematics; I have served as the Chief Engineer of several Commercial Broadcast radio stations, I have been employed as a Staff Engineer at a Commercial Broadcast Television Station and I am presently employed on the staff of a National Laboratory as an Engineering Physicist. These comments are my own, and based on and representing my personal viewpoint of good engineering standards.

A. Access Broadband over Power Line Systems as Part 15 Devices

4, The systems proposed would use radio frequency techniques to provide digital service over unshielded power distribution lines throughout large Urban and Rural footprints. Radiation limits of the radio frequency power attendant with and incidental to distribution of the service proposed using these devices is already in place as limitations stated in Part 15 of the Commission Rules.

5. It is noteworthy that no other device described in Part 15 consists of a wideband source (or transmitter) connected to miles of an overhead radiating structures. This system planform will place most private residences and most all public thorough-fares well within the 30 meter distance referred to in the measurement of radiation limits prescribed by Part 15. This fact of proximity coupled with the field

intensity limits of Part 15 and the broad band nature of these devices will cause a substantial increase in the noise floor of radio spectrum throughout the areas where Access Broadband over Power Line Systems are deployed.

6. It is also noteworthy that the Part 15 limitations are higher than the limits placed on similar non-intentional radiators by other Countries. In some countries, such as Japan, wide-scale adoption of similar systems has been rejected due to the potential for interference to licensed users of the spectrum.

B. Proposed Protection to Licensed Users by use of Adaptive Interference Mitigation

7. It is my belief that Adaptive Interference Mitigation as proposed by proponents of this system does not provide an adequate level of protection to licensed users of the spectrum. This form of mitigation has no practical method of eliminating interference to mobile stations moving through an affected area. Also, interference protection to Broadcast Services allocations is also problematic in that the operator of such an Access over Power Line system will effectively limit the public's access to Broadcast Service allocations without regard for the need, necessity and service of that access by the greater public.

8. The need to protect certain users of the spectrum from interference, such as the Aeronautical, Public Service and Maritime Services, where safety of life issues could arise, should form a compelling argument to eliminate from consideration the Co-Use of

those frequencies by these devices.

C. Lack of Field Study and Modeling for Sky Wave Propagation

9. I believe that there needs to be further study of the potential problem that Sky Wave Propagation of interference that these proposed systems will represent. It seems obvious that a single Power Line access source or tap will under normal conditions not provide a significant problem for licensed spectrum users separated from such a device by a sky wave propagation path. But if the model holds that these sources, acting as pseudo-random noise sources, will provide 6 Db increase in field strength attendant in aggregate with each doubling of the number of injection taps and coverage area then large areas of Power Line Access deployment potentially could produce an increase in the background radio noise to distant areas by sky wave propagation, well above natural sources. Industry's proposal to have large numbers of these potential sources, connected to physically large unshielded distribution systems, operating on frequencies that provide excellent sky wave paths; necessitates a more comprehensive study of the potential for interference by sky wave propagation.

D. Proposed measurement of Field Strength from Access Broadband over Power Lines

10. There has been little actually technical information available to this commenter on the detailed results of Industry engineering field studies of

actual test installations. The proposed measurement detail of using a magnetic loop a short distance above ground and separated from the test subject

power line equipment by up to 10 meters would appear to effectively shield the measurement loop from the actual field strength value. I would propose that additional standard methods of measurement of field strength be developed that might more accurately determine the actual radiated signal from such devices.

11. This commenter feels that measurements of field strength should be undertaken and required, *In Situ*, for all public installations.

12. I would further propose that signal strength measurements be required to be taken from airborne platforms, as is now commonly done to detect radiated leakage problems from Cable TV Systems, to ensure that field radiation limits are not exceeded. The time intervals between measurement surveys should be such as to provide a true representation of the system's compliance with Part 15 limits.

Summary

The portion of the Radio Frequency Spectrum that these proposed Part 15 operations would utilize and perhaps even dominate is unlike any other similarly sized portion of spectrum. The frequencies between 1.8 and 30 MHz represent the majority of the electromagnetic spectrum that exhibits long distance coverage by sky wave propagation. This unique characteristic of propagation allows direct communications between points without any need for additional infrastructure; to allow this characteristic to be impaired by Part 15 non-licensed broadband unintentional radiating devices, I feel,

would not be in the best public interest. I would therefore urge further development of effective and practical measurements standards and further detailed field engineering studies on Access Broadband over Power Line devices before the Commission approves further large-scale adaptation of such devices and systems.

I would like to thank the Commission for the allowing my comments to be entered into the record on this matter.

Respectfully Submitted on 2 May 2004,

Kermit A Carlson
1150 Mc Kee St
Batavia, Illinois 60510

internet: Kermit@arr.com